Document Review: Technical Memorandum No. 3
Human Health Risk Assessment Model Description
Walnut Creek Priority Drainage
Operable Unit 6, Rocky Flats Plant

MAJOR CONCERNS

The Rocky Flats Interagency Agreement (IAG) states in Section VII D.1.a, page 32, that "DOE shall submit for review and approval a description of the fate and transport models that will be utilized, including a summary of the data that will be used with these models. Representative data shall be utilized and the limitations, assumptions, and uncertainties associated with the models shall be documented." Ambiguity exists in the IAG, however, regarding whether a technical memorandum on modeling needs to be issued for every operable unit (OU). A more streamlined approach would be to issue a document describing the models to be used sitewide, including a general description of the limitations and selection criteria. The present document is quite generic for an OU-specific document, and presumably the same models will be used at other OUs. The document contains very little OU-specific information, and information such as the tables in Section 3.6 (Summary of Parameter Values) could be appended to the exposure assessment memorandum for the OU.

2. An important criterion for evaluating the models for OU 6 is their applicability for the phase of the sampling. The approach outlined in the workplan consists of a phased four-step approach to sampling. However, the present document does not discuss how the results of these sampling activities will be incorporated into the modeling strategy. For example, initially only radiation surveys are planned for several of the IHSSs for purposes of screening, whereas only the Triangle Area will be screened for Volatile Organic Compounds (VOCs).

GENERAL COMMENTS

1. The document contains no analysis of the uncertainties and limitations associated with the application of the models at either the Individual Hazardous Substance Site (IHSS) or OU level, and it is questionable as to the appropriateness of such a document for the present phase of the investigation. Section 3.6 states that no list of Contaminants of Concerns (COCs) has been completed at this time. Presumably the rationale for not including the information on the selection of COCs, exposure scenarios, and models in the original workplan is that this information would be presented as

additional data were available. If the technical memorandum is to be an OU-specific document, it would seem that it would be completed after COCs are identified and preliminary screening of IHSSs is conducted.

2. Both HAZWRAP and the regulators have commented in the past regarding the designation of pathways as either significant, insignificant, or negligible. The purpose of the exposure assessment is to determine which pathways are potentially complete. Likewise, models should be selected on the basis of actual or potential pathway completion and not the relative significance of the pathways. The risk assessment will determine the significance of the pathways evaluated.

3. The component of the soil gas transport model that estimates the diffusion of surface volatilization emissions through the floor of an on-site building and the resulting contaminant concentration (Equations 7 and 8) appear to be inappropriate for the types of sites of which OU 6 is composed. Although the workplan states that insufficient data exists to confirm or deny the presence of organic compounds in IHSSs within the OU, and the regulators have requested that this pathway be evaluated at the Rocky Flats Plant, it should only be evaluated at IHSSs where significant levels of VOCs are present. Such levels are typically associated with solvent or fuel spills, and these kinds of sites do not appear to be associated with OU 6. Based on the preliminary results presented in the workplan, only IHSS 166.1-3 shows any evidence of VOC contamination.

4. The plant uptake pathway should be included for the off-site residential scenario. Currently, the off-site pathways associated with fugitive dust are important pathways of concern, given the wind patterns in the area, and all pathways associated with fugitive dust should be evaluated.

5. The document contains no discussion of models to be used for determining atmospheric deposition and soil-to-plant coefficients. Although the plant uptake pathway is not currently designated as a pathway to be modeled, the deposition pathway is listed as insignificant but will be included in modeling activities.

SPECIFIC COMMENTS

1. Section 2.1, pages 2-3 and 2-4. Under the current and future off-site resident scenarios, the plant uptake pathway should be added to the ingestion of garden produce pathway.

2. Section 2.1, pages 2-4 and 2-5. It is unlikely that evaluation of the indoor air pathway for the future office worker and residential scenarios will be appropriate for any of the IHSSs to be evaluated.

3. Section 2.1, p. 2-5. Under the hypothetical future on-site resident scenario, the soil ingestion pathway is not listed, but is included under this scenario in other sections of the document and in the conceptual model.

4. Section 3.1, p. 3-2, first paragraph. The second criterion for model selection is too generic. The specific objectives need to be defined and evaluated in terms of the application based on individual IHSS conceptual models, screening approaches, and proposed sampling requirements, particularly for the source components. In addition, exposure points for all scenarios need to be identified on a map and the analysis should include specific reference to these points in terms of the likelihood of producing meaningful exposure point concentrations for at these locations.

5. Section 3.3. The Hydrologic Simulation Program -- Fortran, Version 9 (HSPF9) model has extensive input requirements. Please discuss the likelihood that these inputs will be available. In addition, this model only models organic contaminants, and the primary contaminants of concern at OU6 are radionuclides. This factor, along with uncertainties associated with modeling intermittent streams make the likelihood of obtaining meaningful results highly questionable.

6. Section 3.4.1, pages 3-8 and 3-9. Equations 1 and 2 require either a saturated vapor concentration or vapor pressure for contaminants as inputs. Please discuss the likelihood that these parameters will be available.

7. Section 3.5.1, page 3-13. A discussion of the box model to be used to estimate transport of volatile organic compounds into a building located on the surface of OU6 is previously discussed in Section 3.4.1 and need not be presented in this section.

8. Table 3-2. This table lists parameters to be used as surface water model inputs. No site-specific values are presented, however. Please discuss the feasibility of obtaining these values.